The Management University of Africa

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UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

DEGREE OF BACHELOR OF ARTS IN DEVELOPMENT STUDIES

BDS 201 : TECHNOLOGY AND DEVELOPMENT

DATE: 4TH APRIL 2017

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **Six (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided.**

QUESTION ONE

Read the Case Study below carefully and answer the questions that follow:

CASE STUDY

Two major issues arise in discussions of meeting increasing demand for food: 1) deteriorating production factors (e.g., soil erosion and water availability), and 2) opportunities to increase production, adjust consumption patterns, and improve distribution systems. Total global food production per capita maintained a slow but steady increase until the mid- 1990s when it began to level off. It is not yet clear whether growth will resume. World protein shortages seem likely as worldwide per capita production of meat, soybeans, and fish all level out.

In the past, growth in food output was sustained by agricultural expansion to new areas. Now, cropland expansion seems to be slowing down as the best quality farming land has already been converted. Per capita cropland has declined in all regions and, based on current population projections, the world average is expected to decline from 0.28 to 0.17 hectares by 2025. The "Green Revolution" introduced technological interventions, such as genetically improved crops, enabling agricultural intensification and yield increases. This saved the conversion of vast areas of natural landscape to cropland and helped to feed growing populations. Critics now characterize the "Green Revolution" technologies and cropping systems as unsustainable and socially inequitable because they require costly, energy intensive, and often unobtainable agricultural inputs. Proponents can claim success, however, in terms of total grain output at the global, regional, and even national levels. Some question whether these yields can be sustained.

Agriculture accounts for two-thirds of current global freshwater use. Regional variations in food production reflect water distribution to a great extent. Global food security rests in part on sufficient water supplies, especially in areas that cannot produce food without irrigation, such as much of the Middle East, the Aral Sea basin in the former Soviet Union, and vast grain-producing areas of China, India, and the U.S.

Great Plains On the other hand, some lands receive substantial, often disastrous, levels of precipitation (e.g., midwest America in 1993 and Bangladesh nearly every monsoon season) that also may complicate agricultural production Over the past two decades, irrigated area has expanded steadily around the world (figure 9), however, expansion rate and existing coverage of irrigation are greater in developing regions than in industrial countries (table 3) (72). Rapid expansion was funded by increasing worldwide economic growth, and motivated by the promise of new, high-yield grain varieties.

The world's current irrigated land area (237 million hectares in 1990) covers only 16 percent of total cropland, but produces more than one third of the global harvest, Increasing demand for food production is likely to increase the pressures on available water reserves (8,71). However, increasing water-use efficiency in agriculture could allow larger areas to be irrigated. For example, increasing efficiency by 10 percent in Pakistan could provide water to irrigate two million additional hectares. Companion needs include attention to crop water-use efficiency, more efficient water management systems, and technologies and policy structures promoting efficiency. In general, food production increases will depend on the ability to mobilize resources to that end, but of equal concern is whether the resource base can support or sustain the needed increases in the long term. Most agricultural production uses environmentally unsustainable practices. Although modest efforts toward sustainable agriculture are evident in industrial countries, population growth and poverty in developing countries undermine efforts to introduce and expand sustainable production practices.

Required:

a) Identify challenges of urbanization **(5 marks)**

b) Identify the roles of Science academy **(8 marks)**

c) What role has technology played in development **(7 marks)**

d) Identify **Three** areas that technology can be applied in Biodiversity **(3 marks)**

e) Identify technological systems in the medical industry **(2 marks)**

QUESTION TWO

a) Explain **Five** key technology trends that raise ethical issues **(5 Marks)**

b) Identify the challenges to intellectual property rights **(4 Marks)**

c) Discuss the term Technologically literate person **(6 Marks)**

QUESTION THREE

a) Identify **Six** priorities for harnessing science and technology **(6 Marks)**

b) Identify **Three** areas that technology can be applied in Biodiversity **(6 marks)**

c) Define the term Indicators by giving examples **(3 Marks)**

QUESTION FOUR

a) Explain **Six** obstacles to sustainable Development **(12 Marks)**

b) Identify **three** sustainability challenges of the 21st Century **(3 Marks)**

QUESTION FIVE

a) Explain **Four** roles played by energy in Development **(8 Marks)**

b) Explain **Seven** criterias used for successful technology transfer in Developing countries **(7 Marks)**

QUESTION SIX

a) Explain **Five** applications of Science and Technology in Development **(10 Marks)**

b) Identify **Five** areas that farmers need technology to improve production **(5 Marks)**